

**METROPOLITAN BOARD OF EDUCATION
TEACHER RETIREMENT PLAN**

**ACTUARIAL VALUATION
AND REPORT**

JULY 1, 2015



Bryan, Pendleton, Swats & McAllister, LLC
A Wells Fargo Company

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Administrative Retirement Committee
Metropolitan Board of Public Education
2601 Bransford Avenue
Nashville, Tennessee 37204

Dear Committee Members:

The attached report summarizes the results of the actuarial valuation of the Metropolitan Board of Education Teacher Retirement Plan as of July 1, 2015. We trust this report will be helpful in updating the Committee with respect to the financing of the plan.

The opportunity to serve the Metropolitan Board of Public Education is appreciated, and we will be pleased to supplement this report in any way, as you request.

This report has been prepared under my supervision; I am a member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, and a consulting actuary with Bryan, Pendleton, Swats and McAllister, LLC of Brentwood, Tennessee, and have met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein. To the best of our knowledge this report has been prepared in accordance with generally accepted actuarial standards, including the overall appropriateness of the analysis, assumptions, and results and conforms to appropriate Standards of Practice as promulgated from time to time by the Actuarial Standards Board, which standards form the basis for the actuarial report. We are not aware of any direct or material indirect financial interest or relationship, including investment management or other services that could create, or appear to create, a conflict of interest that would impair the objectivity of our work.

Sincerely,

J. Bradford Fisher, F.S.A.

Attachment

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Current Valuation

An actuarial valuation of the Metropolitan Board of Education Teacher Retirement Plan was performed as of July 1, 2015. The purpose of the valuation was to examine the liabilities and to determine an actuarially determined contribution sufficient to fund the plan.

Historical Perspective

When the Metropolitan Board of Education Teacher Retirement Plan was initially developed, the intent was that funding of benefits in excess of state reimbursements would be shared in the aggregate equally by the Board and by the teachers, with the employer assuming past service costs. The concept was discarded because the plan was closed to new entrants in 1969. At that point, the membership represented an aging population with no young new entrants to create a stable population that would have permitted such a concept to continue to apply. In 1977, the Board adopted a funding method that amortized costs over the average life expectancy of all active and retired members.

The valuation performed in 1993 set forth funding levels that were significantly higher than the amount of funds available from the budget. As a result, the Board of Education, at the recommendation of the Administrative Retirement Committee, accepted an interim funding schedule, the "1994 Interim Funding Schedule". The purpose of the 1994 Interim Funding Schedule was to provide an actuarially sound method to bring the budgeted amount up to the Actuarially Determined Funding Level over time.

The 1994 Interim Funding Schedule projected that the Board could return to the Actuarially Determined Funding Level by the 2005-2006 fiscal year. Due primarily to actuarial gains from investment returns above those assumed, a return to the Actuarially Determined Funding Level was permitted during the 1999-2000 fiscal year (that is, the Actuarially Determined Funding Level for the 1999-2000 fiscal year was less than the amount set forth in the 1994 Interim Funding Schedule). In effect, the plan had "caught-up". The actual funding was limited by continuing budget constraints.

Beginning on July 1, 2000, the Plan became a component of the Guaranteed Payment Program (GPP), an umbrella plan created by the state and local government to ensure actuarially sound funding for a group of five plans supervised by the Metro Benefit Board and the Board of Education. Under the GPP, unfunded liabilities of the aggregate plan are amortized over a period of no more than thirty years. Payments for the Plan move to a payment account from which distributions are paid to the constituent plans of the GPP as necessary to satisfy current benefit needs and to satisfy funding objectives of the GPP. Funding issues that are specific to the GPP are addressed in a separate report.

SUMMARY OF REPORT**Yearly Comparison of Selected Plan Information**

	2015-16	2014-15	2013-14 *	2012-13	2011-12
Active Participants					
Number	0	0	0	1	2
Annual Payroll	\$0	\$0	\$0	\$57,957	\$116,624
Average Earnings	0	0	0	57,957	58,312
Retired and Disabled Participants					
Number	980	1,006	1,050	1,074	1,115
Average Age	77.63	76.70	76.11	75.34	74.47
Gross Pensions	\$33,018,892	\$33,966,677	\$34,875,797	\$35,123,717	\$35,359,204
Average Gross Pension	33,692	33,764	33,215	32,703	31,712
Vested Terminations					
Number	1	2	2	3	3
Gross Pensions	\$16,991	\$24,955	\$24,955	\$31,355	\$31,355
Average Gross Pension	16,991	12,477	12,477	10,451	10,451
Total Participants	981	1,008	1,052	1,078	1,120
Actuarial Asset Value	\$76,186,820	\$71,169,638	\$65,563,054	\$65,876,231	\$53,321,056
Present Value of Future Benefits	188,591,269	199,925,249	209,335,000	204,116,802	207,805,403
Actuarially Determined Contribution #	12,289,725	13,593,369	14,708,257	14,204,208	15,490,232
Actual Board Contribution	---	4,285,000	4,285,000	4,285,000	4,285,000
Transfer For Current Year From (To)					
Guaranteed Payment Program	---	14,055,834	14,523,832	13,630,670	13,187,574
Assumed Rate of Return	7.5%	7.5%	7.5%	8.0%	8.0%

* Indicates a change in actuarial assumptions and/or actuarial methods.

Previously denoted as the GASB Annual Required Contribution.

The Basis of Valuation section of this report sets forth a summary of benefits provided under the Metropolitan Board of Education Teacher Retirement Plan and summarizes the actuarial assumptions on which the valuation was based. The Actuarial Computations section sets forth details of the determination of an actuarially determined contribution and shows a projection of expected benefit payments over the next 20 years under the existing plan. The Employee Data section summarizes the employee data on which this valuation was based.

The Administrative Retirement Committee adopted a change in actuarial assumptions (lowering the discount rate and updating the mortality assumption) for 2013 that increased the present value of future benefits by 5.8%.

All calculations made in this report have been made utilizing employee data supplied by the Metropolitan Board of Public Education, asset information supplied by the Finance Department of Metro Nashville Government, and the actuarial assumptions summarized herein.

Summary of Provisions of the Plan

Eligibility

Employees hired after April 1, 1963 became participants as a condition of employment. Employees on April 1, 1963, whether participants in a former plan, or not, were allowed to become a participant in the present plan provided written application was received prior to July 1, 1965. The Plan was closed to new entrants as of July 1, 1969, and employees hired after that date became members of the Tennessee Consolidated Retirement System.

Normal Retirement

Condition

The normal date of retirement is the first day of the month following the participant's 65th birthday, or the first day of the month following termination after completion of 25 years of credited service, or completion of 20 years of credited service and attainment of age 60.

Benefit

The normal retirement benefit, which is payable monthly for life, is determined as 2% of average earnings for each year of service.

Earnings are defined as total cash compensation from regular employment.

Average earnings are the average during the thirty-six (36) consecutive months in which earnings were highest.

Early Retirement

Condition

Participants may elect early retirement after 15 years of service and attainment of age 55.

Benefit

A deferred benefit, commencing at age 65, is computed in the same manner as the Normal Retirement Benefit above, based on service as of the participant's early retirement date.

Alternatively, an actuarially reduced benefit commencing immediately may be elected.

Disability Retirement

Condition

Any participant who becomes disabled and who has completed 10 years of service or who is at least 50 years of age and has completed at least 5 years of service may retire and receive a disability benefit. Disability incurred in line of duty has no age or service requirements. Disability means medically determinable injury, disease or mental disorder. Receipt of benefits is subject to an earnings test.

Benefit

The benefit, payable to age 65, is the amount of the "net disability benefit," (i.e., the amount by which the "gross disability benefit" exceeds the sum of his Primary Social Security benefit and his "Disability Deduction" applicable to that month).

The gross disability benefit is 55% of average monthly earnings, plus an additional 10% of average monthly earnings if he has at least one dependent child. The Disability Deduction shall be the amount, if any, by which his average earnings in the 12 months preceding disability are exceeded by the sum of his gross disability benefit and his earnings while disabled.

At age 65 the normal retirement benefit commences. The benefit is computed in the same manner as the Normal Retirement Benefit above, with years of disability counting as years of credited service.

Death of a Disabled Participant

If a disabled participant dies, a survivor benefit is payable to his surviving spouse until her death or remarriage and thereafter, or if there is no surviving spouse, to surviving dependent children.

The amount of the survivor benefit shall equal 75% of the difference between (i) the participant's disability retirement benefit, determined as if his Disability Deduction were zero, and (ii) 50% of all Social Security benefits that the survivor may receive. However, the amount of the survivor benefit payable after the deceased participant's 65th anniversary of his birthdate shall not be greater than the benefit that would have commenced at age 65, based on his average earnings at the time of his termination, if the participant's termination had not occurred until he reached age 65 and he had elected Option A.

Death Before Retirement

- If the death of a Member occurs after he could have elected early or normal retirement, a survivor's benefit shall be payable monthly to the Member's named beneficiary for life. The amount of the survivor benefit is actuarially equivalent in value to the benefit that would otherwise be payable to the beneficiary if the Member had then retired and had elected Option A.
- If the death of a Member occurs before he could have elected early or normal retirement, but after he completed at least 15 years of service, a survivor's benefit shall be payable monthly to the Member's named beneficiary for life. The amount of the survivor benefit is actuarially equivalent in value to the benefit that would otherwise be payable to the beneficiary if the Member had then retired and had elected Option B.
- If death occurs in line of duty, a survivor benefit is payable, and is computed in the same manner as the Disability Retirement, Death of a Disabled Participant benefit above, as though he had died after commencing to receive a disability retirement benefit.

Death after Retirement

If a participant dies after retirement benefits have become payable, no death benefit is payable unless an optional form of benefit has been elected which provides for a death benefit.

Optional Retirement Benefits

The following optional forms of settlement are available:

- Option A: 100% joint and survivor
- Option B: 50% joint and survivor
- Option C: Social Security option
- Option D: Life income with guaranteed payments
- Option E: 100% joint and survivor with pop-up
- Option F: 50% joint and survivor with pop-up
- Option G: Special Design

Termination of Employment - Vesting

Any participant whose termination occurs after he has completed at least 15 years of service and before he attains age 55 shall leave his employee contributions in the plan and be eligible to receive a retirement benefit computed in the same manner as the Early Retirement Benefit above, or may elect a refund of his contributions with no further plan benefits.

Any participant whose termination occurs before he has completed at least 15 years of service will receive a refund of his contributions with no further plan benefits.

Cost-of-Living Increases

Each July 1, up to 3% of the original retirement benefit is added to a member's retirement benefit. The percentage increase is based on the increase in the Consumer Price Index (all items--United States city average) for the preceding calendar year, but will not exceed 3%. In any year when the change of CPI is less than a 1% increase, there is no benefit adjustment made on the following July 1.

Unused Sick Leave

A member may use unused sick leave as creditable service on the basis of 20 days equalling to one month.

Transfer Option

A member may elect to transfer to the Tennessee Consolidated Retirement System at any time prior to retirement.

Military Service

A member who had active duty military service during certain periods may claim up to a maximum of four years of creditable service.

Employee Contributions

Participants contribute in the calendar year 1973 and thereafter

- 3.0% of calendar year earnings which are subject to Social Security Tax, plus
- 6.5% of calendar year earnings in excess of the amount subject to Social Security tax.

Employer Contributions

Each year the employer contributes an amount determined in accordance with the Guaranteed Payment Program.

Investment of Pension Funds

The assets of the plan are divided into various investment management accounts that are custodied by the plan's master custodian. All distributions of benefits are made from these funds.

Summary of Actuarial Assumptions(Sample Values per 1,000 Lives)

	AGE		
	70	80	90
<u>Mortality Rates</u>			
2015 IRS Static Mortality Table for Annuitants			
Male	15.93	51.60	167.93
Female	14.99	39.31	123.26

Adjustments for Future Mortality Improvements: Scale AA used to project improvement to seven years beyond the valuation date

Disablement Rate

Not Applicable

Withdrawal Rate

Not Applicable

Assumed Salary Increases

Not Applicable

Rate of Investment Return

7.50% per annum

Rate of Retirement

Not Applicable

Cost of Living Increases

Benefits increase 3% annually after commencement

Actuarial Funding Method

Level Dollar Amortization

Asset Valuation Method

Five-year smoothing of difference between market value and expected valuation assets. As of July 1, 2009, the resulting actuarial value shall not exceed 120% of the market value, or be less than 80% of the market value.

PLAN ASSETS**Balance Sheet, July 1, 2015**

	<u>Market Value</u>
Assets	
<i>Cash & Equivalents</i>	\$ 5,148,145
<i>Investments</i>	68,575,288
<i>Net Accruals, including pending trades</i>	<u>5,912,535</u>
Total assets	\$ 79,635,968
Liabilities	
Reserve for plan participants	\$ 79,635,968

Deviation From Expected Asset Value

Trust Fund, July 1, 2014 (At Market)	\$ 79,280,996
Assumed Return at 7.50%	5,946,075
Employer Contributions, with Interest	19,028,615
Employee Contributions, with Interest	0
Net Withdrawals for Benefit Payments, with Interest	<u>(22,430,091)</u>
Expected Trust Fund, June 30, 2015	\$ 81,825,595
Actual Trust Fund, June 30, 2015	<u>79,635,968</u>
Deviation From Expected Asset Value	\$ (2,189,627)

Historical Deviations

2015	\$ (2,189,627)
2014	7,292,204
2013	3,840,661
2012	(3,553,681)

Actuarial Value of Assets

Market Value Assets, June 30, 2015	\$79,635,968
Receivable Contribution for 2015	<u>0</u>
Adjusted Market Assets	\$79,635,968
- 80% of prior year's deviation	1,751,702
- 60% of second prior year's deviation	(4,375,322)
- 40% of third prior year's deviation	(1,536,264)
- 20% of fourth prior year's deviation	<u>710,736</u>
Smoothed Asset Value	\$76,186,820
Valuation Assets, within 20% of Market Value	76,186,820

Determination of Actuarially Determined Contribution

Present Value of Benefits (Net of State Reimbursements)		
Active Lives	\$	0
Retired Lives		188,437,955
Deferred Vested Lives		153,314
Total Present Value of Benefits	\$	188,591,269
Actuarial Asset Value		(76,186,820)
Present Value of Future Employee Contributions		0
Present Value of Future Employer Costs	\$	112,404,449
Level Dollar, 30-Year Amortization of Future Costs from July 1, 2000		11,845,518
Interest Adjustment for Mid-year Payment		444,207
Actuarially Determined Contribution	\$	12,289,725

Projected Schedule of Retirement Benefit Payments

Plan Year	Number Retiring	Total Payout *
2016	1	\$19,922,696
2017	0	19,963,809
2018	0	19,912,767
2019	0	19,769,242
2020	0	19,533,654
2021	0	19,206,829
2022	0	18,789,594
2023	0	18,285,784
2024	0	17,698,392
2025	0	17,032,029
2026	0	16,292,630
2027	0	15,487,365
2028	0	14,623,861
2029	0	13,710,415
2030	0	12,756,151
2031	0	11,771,637
2032	0	10,768,128
2033	0	9,758,681
2034	0	8,757,642
2035	0	7,779,899

* Excludes reimbursements from the State.

EMPLOYEE DATA**Distribution of Retired Participants' Gross Pensions****BY AGE**

Age Group	Male			Female			Total		
	No	Pensions		No	Pensions		No	Pensions	
		Total	Average		Total	Average		Total	Average
1-20	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
21-25	0	0	0	0	0	0	0	0	0
26-30	0	0	0	1	37,038	37,038	1	37,038	37,038
31-35	0	0	0	2	28,012	14,006	2	28,012	14,006
36-40	1	28,922	28,922	0	0	0	1	28,922	28,922
41-45	0	0	0	2	42,670	21,335	2	42,670	21,335
46-50	1	18,792	18,792	0	0	0	1	18,792	18,792
51-55	5	62,334	12,466	1	15,640	15,640	6	77,974	12,995
56-60	2	8,831	4,415	3	18,980	6,326	5	27,811	5,562
61-65	2	26,446	13,223	3	44,776	14,925	5	71,222	14,244
66-70	28	1,208,903	43,175	92	3,388,051	36,826	120	4,596,954	38,307
71-75	112	4,410,239	39,377	191	6,559,073	34,340	303	10,969,312	36,202
76-80	72	2,725,825	37,858	147	4,912,570	33,418	219	7,638,395	34,878
81-85	56	2,104,268	37,576	120	3,743,938	31,199	176	5,848,206	33,228
86+	35	1,082,416	30,926	104	2,551,168	24,530	139	3,633,584	26,140
TOTAL	314	\$11,676,976	\$37,187	666	\$21,341,916	\$32,044	980	\$33,018,892	\$33,692

EMPLOYEE DATA**Distribution of Vested Terminated Participants' Pensions****BY AGE**

Age Group	Male			Female			Total		
	No	Pensions		No	Pensions		No	Pensions	
		Total	Average		Total	Average		Total	Average
1-20	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
21-25	0	0	0	0	0	0	0	0	0
26-30	0	0	0	0	0	0	0	0	0
31-35	0	0	0	0	0	0	0	0	0
36-40	0	0	0	0	0	0	0	0	0
41-45	0	0	0	0	0	0	0	0	0
46-50	0	0	0	0	0	0	0	0	0
51-55	0	0	0	0	0	0	0	0	0
56-60	0	0	0	0	0	0	0	0	0
61-65	0	0	0	0	0	0	0	0	0
66-70	0	0	0	0	0	0	0	0	0
71-75	0	0	0	1	16,991	16,991	1	16,991	16,991
76-80	0	0	0	0	0	0	0	0	0
81-85	0	0	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0	0	0
TOTAL	0	\$ 0	\$ 0	1	\$16,991	\$16,991	1	\$16,991	\$16,991